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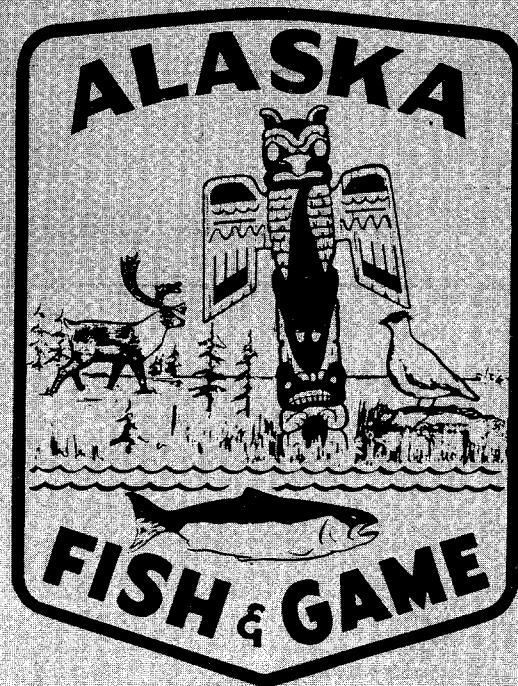
COMPILATION OF CATCH AND ESCAPEMENT DATA OF  
NUSHAGAK AND TOGIAK DISTRICT KING, CHUM,  
PINK AND COHO SALMON, BRISTOL BAY, 1966

By:

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COMPILATION OF CATCH AND ESCAPEMENT DATA OF  
NUSHAGAK AND TOGIK DISTRICT  
KING, CHUM, PINK AND COHO SALMON  
BRISTOL BAY, 1966

By

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## INTRODUCTION

This publication is the first in a series intended to annually present catch and escapement statistics for the king, chum, pink and coho salmon fisheries of Bristol Bay. The major run of salmon species other than red salmon takes place in the Nushagak and Togiak districts of Bristol Bay (Table 1). This report deals only with these two fishing districts. The limited runs in the other three districts of Bristol Bay precludes efforts to sample in these areas.

Personnel of the Alaska Department of Fish and Game collected all data. Mr. Michael L. Nelson of the Division of Commercial Fisheries furnished all scale readings and compiled the data in the form presented.

## METHODS AND MATERIALS

These data were collected by field crews stationed at counting towers and at selected canneries in the Nushagak and Togiak districts of Bristol Bay (Figure 1). Each sampling station was supplied with measuring calipers or tapes, weighing scales, appropriate forms and gum cards for scale collection. Scales were taken from each fish sampled (only exceptions being pink salmon) and placed directly on gum cards and pressed to form plastic impressions. Lengths were recorded to the nearest millimeter and weights to the nearest one tenth of a pound.

Partial escapement counts, both aerial and ground, were obtained in both districts. Escapement counts and samples of pink salmon were collected at the Nuyakuk River field station. Aerial estimates of escapements were derived for most species in both districts and are presented on Table 2.

Escapement sampling of pink salmon was carried out daily at the

Table 1. Summary of Bristol Bay final commercial catch by district and species, 1966.

District	Kings	Chums	Pinks	Cohos	Total
Naknek-Kvichak	5,456	57,273	142,221	4,096	209,046
Egegik	1,949	32,085	8	1,932	35,974
Ugashik	1,916	29,100	11	533	31,560
Nushagak	58,184	129,344	2,337,066	11,517	2,536,111
Togiak	9,967	95,410	13,545	15,864	134,786
TOTAL	77,472	343,212	2,492,851	33,942	2,947,477
% Comp.	2.63	11.64	84.58	1.15	100.00

Figure 1

APPROXIMATE LOCATIONS OF CATCH SAMPLING AND COUNTING TOWERS  
BRISTOL BAY, 1966

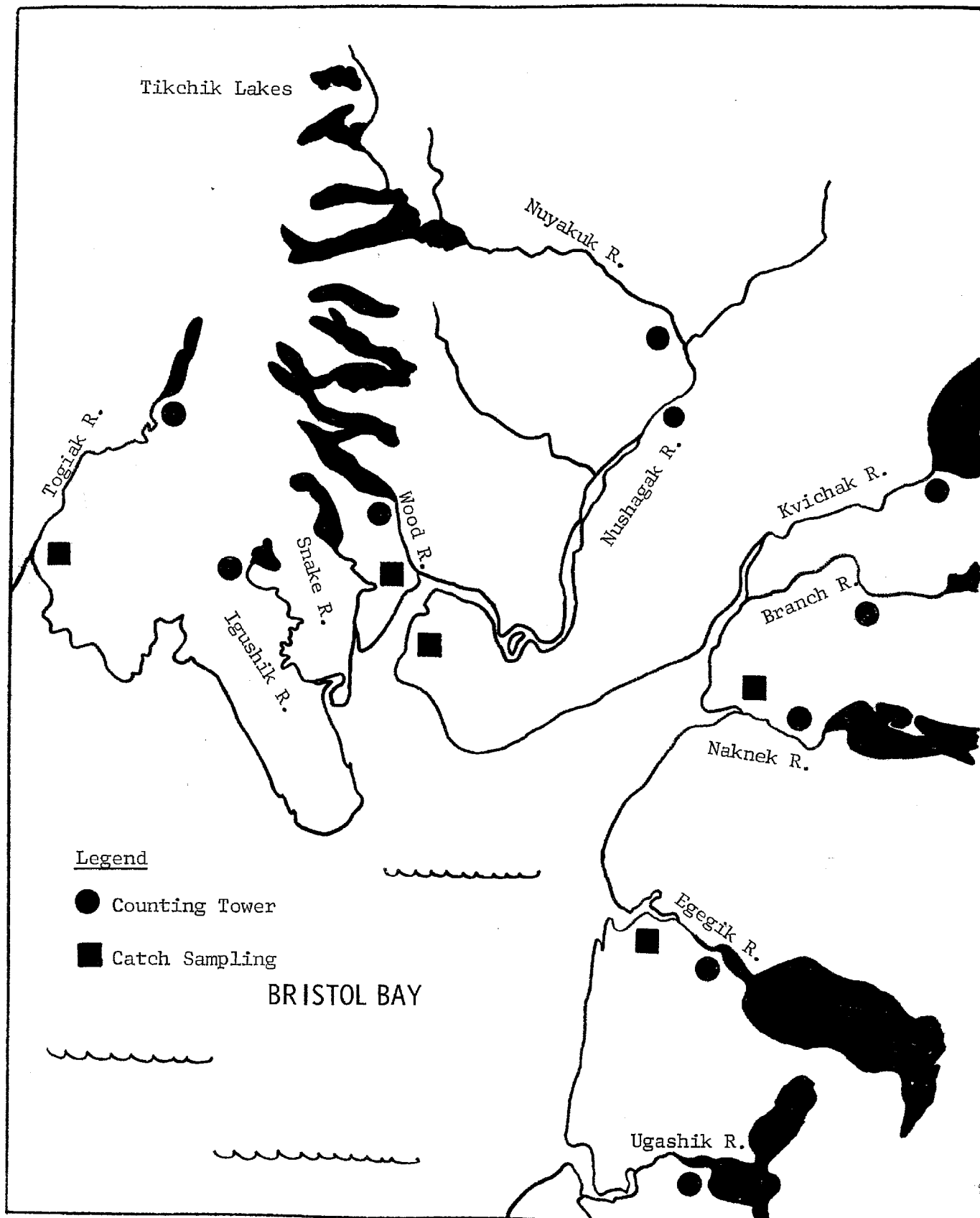




Table 2. Total estimated return by species, Nushagak and Togiak districts, 1966.

Species	Catch	Escapement	Total Return <sup>2/</sup>
<u>NUSHAGAK DISTRICT</u>			
Kings	58,184	30-50,000 <sup>1/</sup>	88-108,000
Chums	129,344	60-80,000 <sup>1/</sup>	189-209,000
Pinks	2,337,066	1,442,424	3,779,000 <sup>2/</sup>
Cohos	11,517	---	---
<u>TOGIAK DISTRICT</u>			
Kings	9,967	---	---
Chums	95,410	75-100,000 <sup>1/</sup>	170-195,000
Pinks	13,545	30,000 <sup>1/</sup>	44,000 <sup>2/</sup>
Cohos	15,864	---	---

<sup>1/</sup> Escapement estimates based on aerial survey of spawning grounds.

<sup>2/</sup> Rounded to nearest thousand.

Nuyakuk River field station. A beach seine was used for capture gear and the crew tried to obtain approximately 120 fish per day. Escapement samples from other species were not collected.

Catch sampling was conducted at Pacific Alaska Fisheries, Inc. in the Nushagak district and Togiak Fisheries, Inc. in the Togiak district. The cannery fish samples were taken by selecting fish randomly from the conveyor belts as the salmon moved into the cannery storage bins. The only exception to the method of selecting samples was at Togiak where king salmon were randomly selected from the cannery docks as the catches were delivered.

The catch samplers were instructed to sample as many fish as possible but not over 200 fish per district per fishing period. Most cannery samples were considerably under the 200 fish minimum. Other duties interfered with the sampling in the Nushagak, while the Togiak sampler was instructed to concentrate on the red salmon fishery.

Remarks appropriate to each district are included with the data from that district.

Both the Gilbert-Rich and European age designations are used throughout this paper. In all age compositions tables the European notation is placed over the Gilbert-Rich notation. All sex and age composition tables are weighted by commercial catch or escapement.

It is the purpose of this report to present all available statistics in a form which will serve the needs of scientists concerned with these fisheries. No attempt will be made to draw conclusions or discuss the merits or shortcomings of the data collection procedures.

## NUSHAGAK DISTRICT

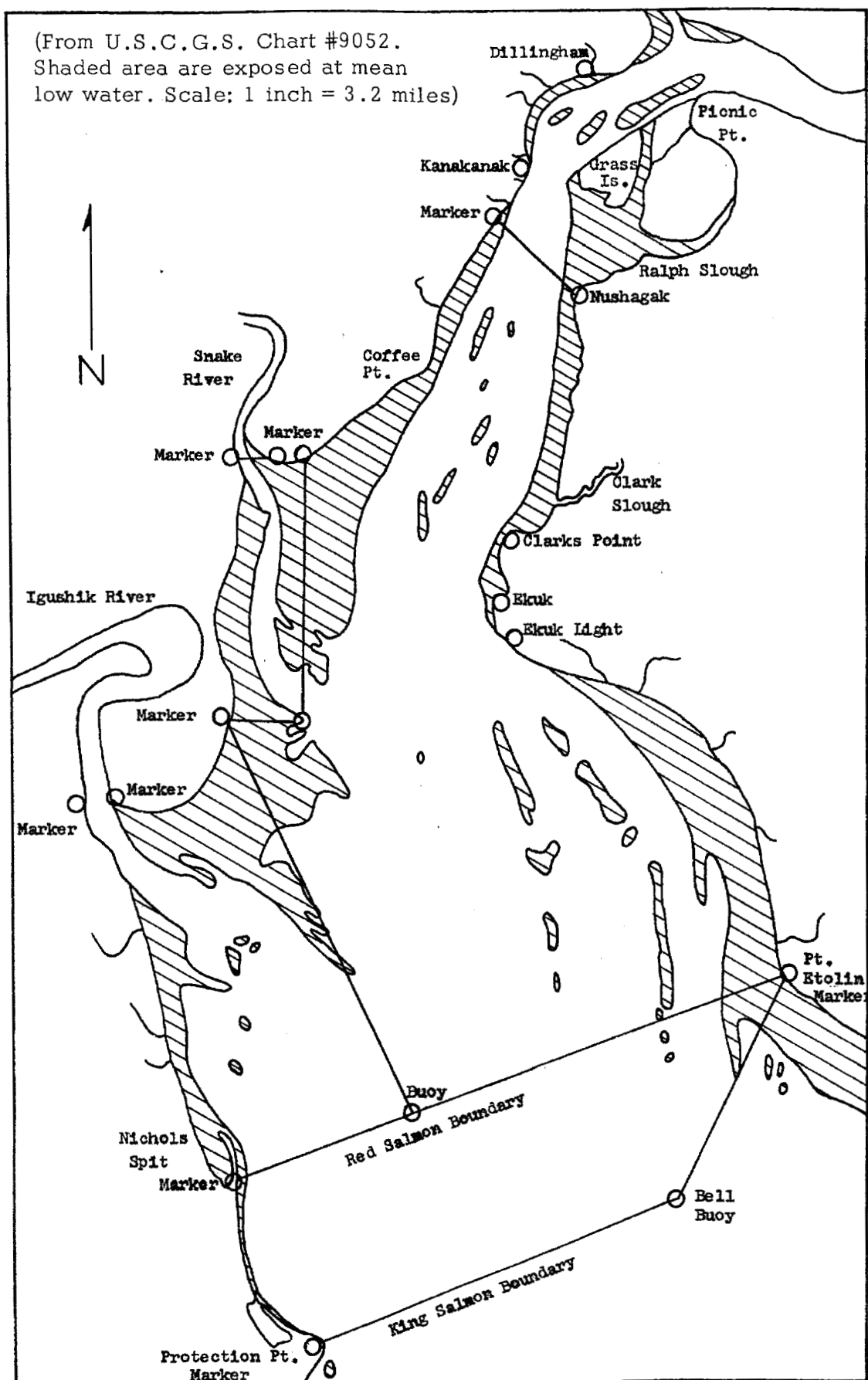
The fishing area in the Nushagak district, which covers approximately 400 square miles, remained similar to that of 1965 (Figure 2).

### King Salmon

Commercial harvest of early run king salmon was not begun until June 13, two weeks later than normal. Price negotiations between fishermen and processors were held during the early king salmon season and fishing did not begin until well after the king salmon run was in progress.

Fishing effort was heavy on the king salmon stocks with over 270 drift boats participating in the fishery. The total catch of 58,184 fish would

Figure 2. 1966 NUSHAGAK COMMERCIAL FISHING DISTRICT.



have been 10-15,000 higher had the fishing fleet operated during the first two weeks of the king salmon season.

King salmon counted past the Nushagak River tower totaled 8,966, a minimal estimate. Counting was not possible until June 28 due to high water conditions yet king salmon were first taken by subsistence nets upriver from the tower locations on May 20. Evidently a good share of the king salmon run had already passed upriver before the tower was operational. Difficulty was also experienced counting kings as they migrated further from shore. Most probable total escapement to the district after analysis of spawning ground surveys, commercial and subsistence catches and partial tower counts is between 30-50,000 (Table 2).

Table 7 through 10 present sex and age composition of the 1966 king salmon catch. Lengths were taken from each fish sampled and are available upon request. Average weight was 18.3 pounds, which was determined by weighing 796 king salmon throughout the season. Data from previous years is not included in this report, as these statistics will appear in a forthcoming report, "History of the Nushagak King Salmon Fishery."

#### Chum Salmon

Chum salmon are taken concurrently with the red salmon fishery in the Nushagak district. The total catch of 129,344 chums was the smallest since 1955.

The chum salmon in the Nushagak district spawn primarily in the Nushagak-Mulchatna River system. With the location of a counting tower on the Nushagak River near Ekwook in 1966, enumeration of most chum salmon stocks was possible. A total of 40,076 chums were counted past the tower. However, this estimated escapement is minimal due to the very poor counting conditions encountered in 1966. Most probable total escapement to the district was in the range of 60-80,000 chum salmon (Table 2).

Tables 11 through 14 present sex and age composition of the 1966 chum salmon catch. Length frequencies are available upon request. Average weight of 44 fish was 8.6 pounds. This small sample was taken from the early portion of the run. In 1965 weight sampling throughout the season showed an average weight of 6.1 pounds. Table 15 is a summary of all age composition data available on the fishery.

#### Pink Salmon

The pink salmon catch of 2,337,066 was the largest in the history of the fishery. Over 570 drift boats and 160 set nets participated in the fishery, which peaked in late July.

Pink salmon are enumerated and sampled at the Nuyakuk River counting station as they continue on their way to their spawning grounds in the upper portion of the Nuyakuk and Tikchik Rivers. Total observed escapement was 1,442,424 pink salmon.

Tables 16 and 17 present sex composition of the 1966 catch and escapement, while Table 18 presents all available sex composition data. Length frequencies are available upon request. Average weight of 299 pink salmon sampled throughout the season was 3.1 pounds. Average weight of pink salmon in 1964 was 3.2 pounds.

#### Coho Salmon

Limited data was collected from the small Nushagak coho salmon run in 1966. The coho salmon catch in 1966 was 11,517, considerably less than catches of recent years. Tables 19 and 20 present sex and age composition of the catch. No data was collected regarding coho salmon escapement. Length frequencies are available upon request. Average weight of 399 coho salmon was 7.5 pounds.

Table 3. Nushagak district final commercial catch by species and period,  
1966

Period	Hours	Kings	Chums	Pinks	Cohos	Total
6/6-11		595				595
13-18		26,006	306			26,312
20-21	24	4,904	1,779	1		6,684
22-23	24	5,808	6,397	1		12,206
25-26	24	16,469	24,661	1		41,131
29-30	12	891	4,561	5		5,457
7/2-3	27	1,342	12,633	532		14,507
5-9	106	705	21,837	598		23,140
10-16	7 days	702	21,753	11,980	58	34,493
17-23	7 days	568	27,664	1,189,090	273	1,217,595
25-26	36	102	2,057	429,922	1,380	433,461
28-30	63	52	4,152	353,046	3,517	360,767
7/31-8/6	6 days	39	1,544	351,590	5,517	358,690
8/7-27		1		300	772	1,073
TOTAL		58,184	129,344	2,337,066	11,517	2,536,111
PERCENT OF DISTRICT CATCH		2.3	5.1	92.1	0.5	100.0

Table 4. Nushagak River final king salmon daily escapement counts, 1966.

Date	Daily Counts	Daily % of Total	Accum. Count
6/28	156	1.74	156
29	684	7.63	840
30	342	3.81	1,182
7/ 1	310*	3.46	1,492
2	310*	3.46	1,802
3	310*	3.46	2,112
4	310*	3.46	2,422
5	276	3.08	2,698
6	102	1.14	2,800
7	162*	1.81	2,962
8	222	2.48	3,184
9	264	2.94	3,448
10	1,146	12.78	4,594
11	960	10.71	5,554
12	748	8.34	6,302
13	410*	4.57	6,712
14	210*	2.33	6,922
15	150*	1.67	7,072
16	100*	1.12	7,172
17	78	0.87	7,250
18	156	1.74	7,406
19	198	2.21	7,604
20	186	2.07	7,790
21	588	6.56	8,378
22	138	1.54	8,516
23	96	1.07	8,612
24	180	2.01	8,792
25	102	1.14	8,894
26	30	0.33	8,924
27	0	0.00	8,924
28	6	0.07	8,930
29	18	0.20	8,948
30	6	0.07	8,954
31	12	0.13	8,966
TOTAL	8,966	100.00	8,966

\* Estimated daily escapement.

Table 5. Nushagak River final chum salmon daily escapement counts, 1966.

Date	Daily Counts	Daily % of Total	Accum. Count
6/29	12	0.03	12
30	78	0.19	90
7/ 1	40*	0.10	130
2	40*	0.10	170
3	0	0.00	170
4	18	0.04	188
5	0	0.00	188
6	0	0.00	188
7	0	0.00	188
8	0	0.00	188
9	54	0.13	242
10	972	2.43	1,214
11	606	1.51	1,820
12	456	1.14	2,276
13	616*	1.54	2,892
14	616*	1.54	3,508
15	616*	1.54	4,124
16	876	2.19	5,000
17	4,296	10.72	9,296
18	6,612	16.49	15,908
19	3,360	8.38	19,268
20	2,358	5.88	21,626
21	3,888	9.70	25,514
22	3,216	8.02	28,730
23	2,136	5.34	30,866
24	3,108	7.76	33,974
25	2,280	5.69	36,254
26	936	2.34	37,190
27	726	1.81	37,916
28	438	1.09	38,354
29	612	1.53	38,966
30	450	1.12	39,416
31	276	0.69	39,692
8/ 1	90	0.22	39,782
2	180	0.45	39,962
3	114	0.29	40,076
4	0	0.00	40,076
TOTAL	40,076	100.00	40,076

\* Estimated daily escapement.



Table 6. Nuyakuk River final pink salmon daily escapement counts, 1966.

Date	Daily Counts	Daily % of Total	Accum. Counts
7/12	6	0.00	6
13	0	0.00	6
14	72	0.00	78
15	204	0.01	282
16	300	0.02	582
17	576	0.04	1,158
18	552	0.04	1,710
19	912	0.06	2,622
20	1,800	0.12	4,422
21	3,732	0.26	8,154
22	3,690	0.26	11,844
23	4,524	0.31	16,368
24	15,702	1.09	32,070
25	45,858	3.18	77,928
26	35,658	2.47	113,586
27	15,624	1.08	129,210
28	27,270	1.89	156,480
29	61,254	4.25	217,734
30	77,814	5.39	295,548
31	74,460	5.16	370,008
8/ 1	77,838	5.40	447,846
2	90,480	6.27	538,326
3	67,740	4.70	606,066
4	56,964	3.95	663,030
5	22,572	1.56	685,602
6	19,536	1.35	705,138
7	38,166	2.65	743,304
8	28,878	2.00	772,182
9	33,294	2.31	805,476
10	67,062	4.65	872,538
11	42,396	2.94	914,934
12	35,460	2.46	950,394
13	61,818	4.29	1,012,212
14	33,036	2.29	1,045,248
15	44,202	3.06	1,089,450
16	46,830	3.25	1,136,280
17	53,940	3.74	1,190,220
18	54,900	3.81	1,245,120
19	34,476	2.39	1,279,596
20	29,646	2.06	1,309,242
21	39,414	2.73	1,348,656
22	30,654	2.13	1,379,310
23	48,288	3.35	1,427,598
24	9,198	0.64	1,436,796
25	3,540	0.25	1,440,336
26	2,088	0.14	1,442,424
TOTAL	1,442,424	100.00	1,442,424

Table 7. Sex composition of Nushagak district king salmon commercial catch by period, 1966.

Period	No. of Samples	No. in Sample		Percent		Commercial Catch	No. in Catch	
		Males	Females	Males	Females		Males	Females
6/6-18	16	300	145	66.8	33.2	26,601	17,769	8,832
20-21	5	77	33	70.0	30.0	4,904	3,433	1,471
22-23	7	105	37	73.9	26.1	5,808	4,292	1,516
6/25-8/27	9	100	58	63.3	36.7	20,871	13,211	7,660
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WEIGHTED TOTALS	37	582	277	66.5	33.5	58,184	38,705	19,479

Table 8. Age composition of Nushagak district male king salmon commercial catch by period, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group						Totals
			0.3 4 <sub>1</sub>	1.2 4 <sub>2</sub>	1.3 5 <sub>2</sub>	1.4 6 <sub>2</sub>	1.5 7 <sub>2</sub>	2.4 7 <sub>3</sub>	
6/6-18	16	229	0.4	8.3	57.6	32.7	0.5	0.5	100.0
20-23	12	159	1.3	37.1	39.0	22.0	0.6	---	100.0
6/25-8/27	9	81	---	39.5	30.9	28.4	1.2	---	100.0
TOTALS	37	469							
WEIGHTED PERCENTAGES			0.4	24.7	44.8	29.1	0.8	0.2	100.0

Table 9. Age composition of Nushagak district female king salmon commercial catch by period, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group				Totals
			1.3 5 <sub>2</sub>	1.4 6 <sub>2</sub>	1.5 7 <sub>2</sub>	2.4 7 <sub>3</sub>	
6/6-18	16	132	8.3	87.1	3.0	1.6	100.0
20-23	12	60	11.7	81.7	6.6	---	100.0
6/25-8/27	9	53	11.3	84.9	3.8	----	100.0
TOTALS	37	245					
WEIGHTED PERCENTAGES			10.0	85.4	3.9	0.7	100.0

Table 10. Age composition of Nushagak district king salmon commercial catch by period, both sexes combined, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group						Totals
			0.3 4 <sub>1</sub>	1.2 4 <sub>2</sub>	1.3 5 <sub>2</sub>	1.4 6 <sub>2</sub>	1.5 7 <sub>2</sub>	2.4 7 <sub>3</sub>	
6/6-18	16	361	0.3	5.3	39.6	52.6	1.4	0.8	100.0
20-23	12	219	0.9	26.9	31.5	38.4	2.3	---	100.0
6/25-8/27	9	134	---	23.9	23.1	50.7	2.3	---	100.0
TOTALS	37	714							
WEIGHTED PERCENTAGES			0.3	15.9	32.2	49.3	1.9	0.4	100.0

Table 11. Sex composition of Nushagak district chum salmon commercial catch by period, 1966.

Period	No. of Samples	<u>No. in Sample</u>		<u>Percent</u>		Commercial Catch	<u>No. in Catch</u>	
		Males	Females	Males	Females		Males	Females
6/6-21	7	63	34	64.9	35.1	2,085	1,353	732
22-23	5	52	37	58.4	41.6	6,397	3,736	2,661
25-26	6	51	112	31.3	68.7	24,661	7,719	16,942
6/29->	13	68	175	28.0	72.0	96,201	26,936	69,265
<hr/>								
WEIGHTED TOTALS	31	234	358	30.7	69.3	129,344	39,744	89,600

Table 12. Age composition of Nushagak district male chum salmon commercial catch by period, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group			Totals
			0.2 3 <sub>1</sub>	0.3 4 <sub>1</sub>	0.4 5 <sub>1</sub>	
6/6-21	7	59	5.1	69.5	25.4	100.0
22-23	5	48	4.1	66.7	29.2	100.0
25-26	6	46	0.0	71.7	28.3	100.0
6/29->	13	55	23.6	65.5	10.9	100.0
TOTALS	31	208				
WEIGHTED PERCENTAGES			16.3	67.0	16.7	100.0

Table 13. Age composition of Nushagak district female chum salmon commercial catch by period, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group			Totals
			0.2 3 <sub>1</sub>	0.3 4 <sub>1</sub>	0.4 5 <sub>1</sub>	
6/6-21	7	32	6.3	65.6	28.1	100.0
22-23	5	35	0.0	85.7	14.3	100.0
25-26	6	94	0.0	79.8	20.2	100.0
6/29->	13	138	10.1	79.0	10.9	100.0
TOTALS	31	299				
WEIGHTED PERCENTAGES			7.9	79.2	12.9	100.0

Table 14. Age composition of Nushagak district chum salmon commercial catch, by period, both sexes combined, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group			Totals
			$\frac{0.2}{3_1}$	$\frac{0.3}{4_1}$	$\frac{0.4}{5_1}$	
6/6-21	7	91	5.5	68.1	26.4	100.0
22-23	5	83	2.4	74.7	22.9	100.0
25-26	6	140	0.0	77.1	22.9	100.0
6/29->	13	193	14.0	75.1	10.9	100.0
TOTALS	31	507				
WEIGHTED PERCENTAGES			10.7	75.3	14.0	100.0

Table 15. Summary of age composition of chum salmon commercial catches in the Nushagak district, 1960-1966<sup>1/</sup>.

Year	No. of Samples	No. of Fish	Percent by Age Group			Totals
			0.2	0.3	0.4	
			3 <sub>1</sub>	4 <sub>1</sub>	5 <sub>1</sub>	
<u>Males</u>						
1960	5	80	7.5	92.5	0.0	100.0
1961	6	97	0.9	95.9	3.2	100.0
1965	4	16	0.0	100.0	0.0	100.0
1966	31	208	16.3	67.0	16.7	100.0
<u>Females</u>						
1960	5	93	5.4	94.6	0.0	100.0
1961	6	110	0.9	97.3	1.8	100.0
1965	4	44	2.3	97.7	0.0	100.0
1966	31	299	7.9	79.2	12.9	100.0
<u>Sexes Combined</u>						
1960	5	173	6.4	93.6	0.0	100.0
1961	6	207	1.0	96.6	2.4	100.0
1965	4	60	1.7	98.3	0.0	100.0
1966	31	507	10.7	75.3	14.0	100.0

<sup>1/</sup> Age composition weighted by catch in 1966 and unweighted in all other years.



Table 16. Sex composition of Nushagak district pink salmon commercial catch by period, 1966.

Date	No. of Samples	<u>No. in Samples</u>		<u>Percent</u>		Commercial Catch	<u>No. in Catch</u>	
		Males	Females	Males	Females		Males	Females
>-7/23	24	359	240	59.9	40.1	1,202,208	702,123	500,085
7/25-26	10	175	125	58.3	41.7	429,922	250,645	179,277
7/28->	4	55	65	45.8	54.2	704,936	322,861	382,075
WEIGHTED TOTALS	38	589	430	54.6	45.4	2,337,066	1,275,629	1,061,437

Table 17. Sex composition of Nuyakuk River pink salmon escapement by period, 1966.

Date	No. of Samples	No. in Sample		Percent		Escapement	No. in Escapement	
		Males	Females	Males	Females		Males	Females
7/12-24	3	38	36	51.4	48.6	32,070	16,484	15,586
25	3	48	42	53.3	46.7	45,858	24,442	21,416
26	4	53	67	44.2	55.8	35,658	15,761	19,897
27	3	36	54	40.0	60.0	15,624	6,250	9,374
28	3	26	61	29.9	70.1	27,270	8,154	19,116
29	4	36	84	30.0	70.0	61,254	18,376	42,878
30	4	35	85	29.2	70.8	77,814	22,722	55,092
31	4	45	75	37.5	62.5	74,460	27,922	46,538
8/ 1	4	41	79	34.2	65.8	77,838	26,621	51,217
2	3	22	68	24.4	75.6	90,480	22,077	68,403
3-4	3	36	54	40.0	60.0	124,704	49,882	74,822
5	3	47	36	56.6	43.4	22,572	12,776	9,796
6/26	-	--	--	36.7 <sup>1/</sup>	63.3 <sup>1/</sup>	756,822	277,754	479,068
WEIGHTED TOTALS	41	463	741	36.7	63.3	1,442,424	529,221	913,203

<sup>1/</sup> Derived from all previous samples.

Table 18. Summary of sex composition of pink salmon catch and escapement in the Nushagak district for 1960, 1962, 1964, and 1966.

Year	No. of Samples	No. in Sample		Percent		No. of Fish		Total
		Males	Females	Males	Females	Males	Females	
<u>CATCH</u>								
1960	6	514	127	80.2	19.8	232,404	57,377	289,781
1962	1	151	160	48.6	51.4	427,886	452,538	880,424
1964	19	560	255	68.7	31.3	1,029,000	468,817	1,497,817
1966	38	589	430	54.6	45.4	1,275,629	1,275,629	2,337,066
<u>ESCAPEMENT</u> <sup>1/</sup>								
1962	2	13	36	26.5	73.5	143,895	399,105	543,000
1964	52	717	1,180	37.8	62.2	344,184	566,356	910,540
1966	41	463	741	36.7	63.3	529,221	913,203	1,442,424
<u>SYSTEM TOTAL</u>								
1962	3	164	196	40.2	59.8	571,781	851,643	1,423,424
1964	71	1,277	1,435	57.0	43.0	1,373,184	1,035,173	2,408,357
1966	79	1,052	1,171	47.8	52.2	1,804,850	1,974,640	3,779,490

<sup>1/</sup> Sex ratio derived from sampling of Nuyakuk River escapement.

Table 19. Sex composition of Nushagak district coho salmon commercial catch, 1966<sup>1/</sup>

Period	No. of Samples	<u>No. in Sample</u>		<u>Percent</u>		Commercial Catch	<u>No. in Catch</u>	
		Males	Females	Males	Females		Males	Females
7/10-8/27	16	129	307	29.6	70.4	11,517	3,409	8,108

<sup>1/</sup> Unweighted.

Table 20. Age composition of Nushagak district coho salmon commercial catch, 1966<sup>1/</sup>

Period	No. of Samples	No. of Fish	<u>Percent by Age Group</u>		Total
			<u>1.1</u>	<u>2.1</u>	
			3 <sub>2</sub>	4 <sub>3</sub>	
<u>MALES</u>					
7/10-8/27	16	105	10.5	89.5	100.0
<u>FEMALES</u>					
7/10-8/27	16	247	1.6	98.4	100.0
<u>SEXES COMBINED</u>					
7/10-8/27	16	352	4.3	95.7	100.0

<sup>1/</sup> Unweighted

## TOGIAC DISTRICT

The fishing area in the Togiak district remained similar to that of 1965 (Figure 3). Of seven subsections open to fishing in 1966 only three were fished: Togiak, Osviak and Kulukak with the Togiak River section accounting for over 90 percent of the commercial catch. Catch statistics were gathered only on the king and chum salmon fisheries.

### King Salmon

A king salmon harvest of 9,967 was taken in 1966, with the majority of the kings being taken in the Togiak River section (Table 21). Escapement estimates were not made, although the escapement was similar to 1964 when 5,000 kings were estimated to be on the spawning grounds.

Sex and age composition for both 1965 and 1966 are presented in Table 22 through 29. Lengths were taken from each fish sampled and are available upon request. Average weight was 21.8 pounds in 1965 and 20.7 pounds in 1966. Sample sizes for average weight were 257 fish in 1965 and 147 in 1966.

### Chum Salmon

Chum salmon are taken concurrently with the red salmon fishery in the Togiak district. The total catch of 95,410 chums was taken mainly from the Togiak River section, with small to moderate catches being made in the Kulukak and Osviak subsections (Table 21).

Chum salmon aerial surveys were flown in all of the Togiak district in 1966 and a total escapement of 75-100,000 chums were estimated to be on the spawning grounds (Table 2).

Tables 30 through 34 present sex and age composition of the 1965 and 1966 chum salmon catch, while Table 35 summarizes all age composition data for the district. Length frequencies are available upon request. Average weight of 442 chum salmon sampled throughout the season was 7.5 pounds. This corresponds closely with average weights obtained in 1964 and 1965 of 7.0 pounds and 6.8 pounds, respectively.

Figure 3. 1966 TOGIAC COMMERCIAL FISHING DISTRICT

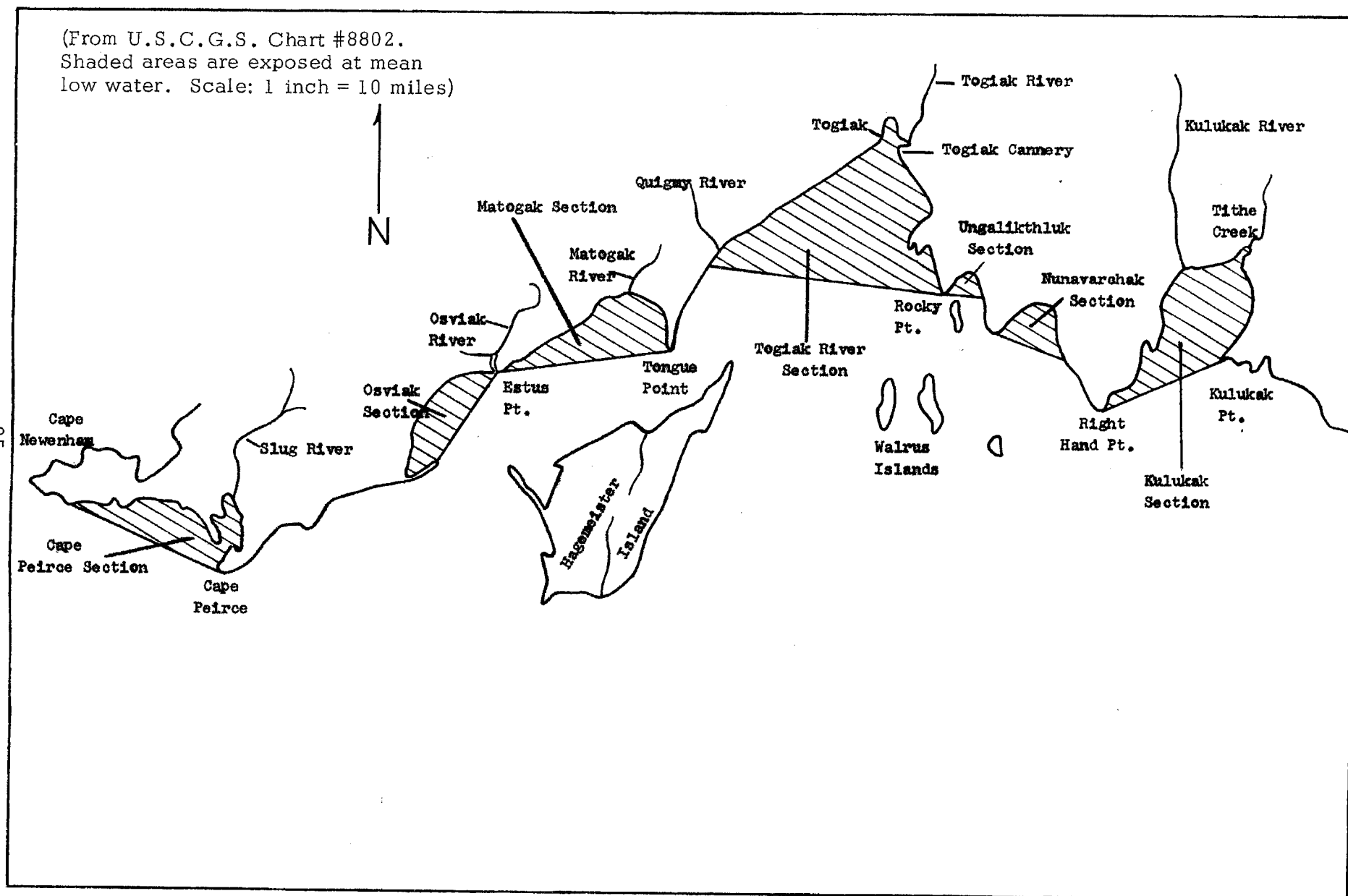


Table 21. Togiak district final commercial catch by species and period,  
1966<sup>1/</sup>

Period	Hours	Kings	Chums	Pinks	Cohos	Total
6/13-18	5 days	750	745	1		1,496
20-25	5 days	3,025	7,851	24		10,900
6/27-7/2	5 days	3,338	17,655	185		21,178
7/4-9	5 days	1,886	14,709	293		16,888
12-15	3 days	690	19,267	446		20,403
18-21	4 days	216	25,059	2,006	5	27,286
25-29	5 days	49	6,521	1,657	12	8,239
8/1-6	5 days	6	2,775	1,404	493	4,678
8-13	5 days	3	789	7,528	2,823	11,143
15-20	5 days	2	24	1	4,075	4,102
8/22->		2	15		8,456	8,473
Totals		9,967	95,410	13,545	15,864	134,786
Percent of district catch		7.4	70.8	10.0	11.8	100.0

<sup>1/</sup> Includes 17,563 Osviak fish: 328 kings, 16,784 chums, and 451 pinks.  
Includes 4,947 Kulukak fish: 25 kings, 4,094 chums, 810 pinks and 18  
coho.

Table 22. Sex composition of Togiak district king salmon commercial catch by period, 1965.

Period	No. of Samples	<u>No. in Sample</u>		<u>Percent</u>		Commercial Catch	<u>No. in Catch</u>	
		Males	Females	Males	Females		Males	Females
6/14-19	5	72	35	67.3	32.7	1,786	1,202	584
6/21->	8	114	65	63.7	36.3	9,123	5,811	3,312
Weighted Totals	13	186	100	64.3	35.7	10,909	7,013	3,896



Table 23. Age composition of Togiak district male king salmon commercial catch by period, 1965.

Period	No. of Samples	No. of Fish	Percent by Age Group					Totals
			<u>1.2</u> 4 <sub>2</sub>	<u>1.3</u> 5 <sub>2</sub>	<u>2.2</u> 5 <sub>3</sub>	<u>1.4</u> 6 <sub>2</sub>	<u>1.5</u> 7 <sub>2</sub>	
6/14 - 19	5	61	26.2	32.8	1.7	34.4	4.9	100.0
6/21 ->	8	95	17.9	53.7	---	27.4	1.0	100.0
Totals	13	156						
Weighted Percentages			19.4	50.1	0.2	28.6	1.7	100.0

Table 24. Age composition of Togiak district female king salmon commercial catch by period, 1965.

Period	No. of Samples	No. of Fish	Percent by Age Group			Totals
			<u>1.3</u> 5 <sub>2</sub>	<u>1.4</u> 6 <sub>2</sub>	<u>1.5</u> 7 <sub>2</sub>	
6/14 - 19	5	27	11.1	85.2	3.7	100.0
6/21 ->	8	52	28.8	69.2	2.0	100.0
Totals	13	79				
Weighted Percentages			26.2	71.6	2.2	100.0

Table 25. Age composition of Togiak district king salmon commercial catch by period, both sexes combined, 1965.

Period	No. of Samples	No. of Fish	Percent by Age Group					Totals
			$\frac{1.2}{4_2}$	$\frac{1.3}{5_2}$	$\frac{2.2}{5_3}$	$\frac{1.4}{6_2}$	$\frac{1.5}{7_2}$	
6/14 - 19	5	88	18.2	26.1	1.2	50.0	4.5	100.0
6/21 - >	8	147	11.6	44.9	---	42.2	1.3	100.0
Totals	13	235						
Weighted Percentages			12.7	41.8	0.2	43.5	1.8	100.0

Table 26. Sex composition of Togiak district king salmon commercial catch by period, 1966.

Period	No. of Samples	<u>No. in Sample</u>		<u>Percent</u>		Commercial Catch	<u>No. in Catch</u>	
		Males	Females	Males	Females		Males	Females
6/13-25	10	111	96	53.6	46.4	3,775	2,023	1,752
6/27->	5	49	84	36.8	63.2	6,192	2,279	3,913
Totals	15	160	180	43.2	56.8	9,967 <sup>1/</sup>	4,302	5,665

<sup>1/</sup> Includes 328 kings from Osviak section and 25 kings from Kulukak section.

Table 27. Age composition of Togiak district male king salmon commercial catch by period, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group				Totals
			$\frac{1.2}{4_2}$	$\frac{1.3}{5_2}$	$\frac{1.4}{6_2}$	$\frac{2.3}{6_3}$	
6/13-25	10	97	10.3	55.7	33.0	1.0	100.0
6/27->	5	40	5.0	45.0	50.0	---	100.0
Totals	15	137					
Weighted Percentages			7.5	50.0	42.0	0.5	100.0

Table 28. Age composition of Togiak district female king salmon commercial catch by period, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group			Totals
			$\frac{1.3}{5_2}$	$\frac{1.4}{6_2}$	$\frac{1.5}{7_2}$	
6/13-25	10	84	25.0	71.4	3.6	100.0
6/27->	5	75	37.3	60.0	2.7	100.0
Totals	15	159				
Weighted Percentages			33.5	63.5	3.0	100.0

Table 29. Age composition of Togiak district king salmon commercial catch by period, both sexes combined, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group					Total
			$\frac{1.2}{4_2}$	$\frac{1.3}{5_2}$	$\frac{1.4}{6_2}$	$\frac{2.3}{6_3}$	$\frac{1.5}{7_2}$	
6/13 - 25	10	181	5.5	41.4	50.8	0.6	1.7	100.0
6/27 ->	5	115	1.7	40.0	56.6	---	1.7	100.0
Totals	15	296						
Weighted Percentages			3.1	40.5	54.4	0.3	1.7	100.0

Table 30. Sex composition of Togiak district chum salmon commercial catch, by period, 1965.

Period	No. Samples	<u>No. in Samples</u>		<u>Percent</u>		Commercial Catch	<u>No. in Catch</u>	
		Males	Females	Males	Females		Males	Females
- 6/21	5	42	28	60.0	40.0	625	375	250
6/22 - 27	10	185	141	56.7	43.3	16,508	9,360	7,148
6/28 - 7/3	10	198	127	60.9	39.1	28,081	17,101	10,980
7/4 - 11	2	14	16	46.7	53.3	28,763	13,432	15,331
7/12 - 8/2	10	24	36	40.0	60.0	37,544	15,018	22,526
Weighted Totals	37	463	348	49.6	50.4	111,521	55,286	56,235

Table 31. Sex composition of Togiak district chum salmon commercial catch by period, 1966.

Period	No. of Samples	No. in Sample		Percent		Commercial Catch <sup>1/</sup>	No. in Catch	
		Males	Females	Males	Females		Males	Females
6/13 - 25	11	98	170	36.6	63.4	8,596	3,146	5,450
6/27 - 7/2	8	56	184	23.3	76.7	17,655	4,114	13,541
7/4 - 9	9	79	176	31.0	69.0	14,709	4,560	10,149
12 - 17	9	50	171	22.6	77.4	19,267	4,354	14,913
7/19 - 8/22	6	49	131	27.2	72.8	35,183	9,570	25,613
Weighted Totals	43	332	832	27.0	73.0	95,410	25,744	69,666

<sup>1/</sup> Catch includes 16,784 chums from Osviak section and 4,094 chums from Kulukak section.

Table 32. Age composition of Togiak district male chum salmon commercial catch by period, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group			Totals
			$\frac{0.2}{3_1}$	$\frac{0.3}{4_1}$	$\frac{0.4}{5_1}$	
6/13-25	11	92	0.0	60.9	39.1	100.0
6/27-7/2	8	52	0.0	80.8	19.2	100.0
4-9	9	78	5.1	51.3	43.6	100.0
12-17	9	46	1.9	52.4	45.7	100.0
7/19-8/22	6	39	18.0	48.7	33.3	100.0
Totals	43	307				
Weighted Percentages			7.9	56.4	35.7	100.0



Table 33. Age composition of Togiak district female chum salmon commercial catch by period, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group			Totals
			$\frac{0.2}{3_1}$	$\frac{0.3}{4_1}$	$\frac{0.4}{5_1}$	
6/13 - 25	11	158	0.6	67.1	32.3	100.0
6/27 - 7/2	8	164	0.0	89.0	11.0	100.0
4 - 9	9	161	0.6	78.9	20.5	100.0
12 - 17	9	157	5.7	73.9	20.4	100.0
7/19 - 8/22	6	107	12.1	82.2	5.7	100.0
Totals	43	747				
Weighted Percentages			5.8	80.1	14.1	100.0

Table 34. Age composition of Togiak district chum salmon commercial catch by period, both sexes combined, 1966.

Period	No. of Samples	No. of Fish	Percent by Age Group			Totals
			<u>0.2</u> 3 <sub>1</sub>	<u>0.3</u> 4 <sub>1</sub>	<u>0.4</u> 5 <sub>1</sub>	
6/13 - 25	11	250	0.4	64.8	34.8	100.0
6/27 - 7/2	8	216	0.0	87.0	13.0	100.0
4 - 9	9	239	2.1	69.9	28.0	100.0
12 - 17	9	203	4.9	69.0	26.1	100.0
7/19 - 8/22	6	146	13.8	73.3	12.9	100.0
Totals	43	1,054				
Weighted Percentages			6.4	73.7	19.9	100.0

Table 35. Summary of age composition of chum commercial catches in the Togiak district, 1961-1966<sup>1/</sup>.

Year	No. of Samples	No. of Fish	Percent by Age Group			Totals
			0.2	0.3	0.4	
			3 <sub>1</sub>	4 <sub>1</sub>	5 <sub>1</sub>	
<u>MALES</u>						
1961	5	94	2.1	97.9	0.0	100.0
1963	6	116	36.2	60.3	3.5	100.0
1965	37	363	0.5	87.3	12.2	100.0
1966	43	307	7.9	56.4	35.7	100.0
<u>FEMALES</u>						
1961	5	88	1.1	96.6	2.3	100.0
1963	6	110	20.0	78.2	1.8	100.0
1965	37	348	0.5	93.4	6.1	100.0
1966	43	747	5.8	80.1	14.1	100.0
<u>SEXES COMBINED</u>						
1961	5	182	1.6	97.3	1.1	100.0
1963	6	226	28.3	69.0	2.7	100.0
1965	37	711	0.6	90.3	9.1	100.0
1966	43	1,054	6.4	73.7	19.9	100.0

<sup>1/</sup> Age composition weighted by catch in 1966 and unweighted in all other years.

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